Presentation ID:
PS1-05-24

Frequency, characterization, and clinical impact of unexpected cardiac and extracardiac imaging findings in premenopausal women on the CROWN study

Amanda Broderick[1], Sarah Hatcher[1], Ralph B. D'Agostino[2], Jr., Nathaniel O'Connell[2], Rani Bansal[1], Carey Anders[1], Stacy Telloni[1], Kelly Westbrook[1], Abirami Natarajan[1], Vijay G. Paryani[1], Neha J. Pagidipati[3], David Wendel[4], Emily Douglas[5], Katherine Ansley[5], Carolyn J. Park[6], Karl M. Richardson[6], Sherona R. Sirkisoon[5], Mary Helen Hackney[7], Hetal Vachhani[7], Masey Ross[7], Lorraine N. Vélez-Torres[8,9], Jennifer H. Jordan[9,10,11], Alexandra Thomas[1]

[1]Duke Cancer Institute, Department of Medicine, Duke University; [2]Department of Biostatistics and Data Science, Wake Forest University Health Sciences; [3]Division of Cardiology, Department of Medicine, Duke University; [4]Division of Cardiology, Cardiovascular Magnetic Resonance Center, Duke University; [5]Department of Cancer Medicine, Wake Forest School of Medicine; [6]Department of Cardiovascular Medicine, Wake Forest School of Medicine; [7]Division of Hematology, Oncology and Palliative Care, Massey Comprehensive Cancer Center, Virginia Commonwealth University; [8]University of Puerto Rico Comprehensive Cancer Center; [9]Virginia Commonwealth University Massey Comprehensive Cancer Center; [10]Pauley Heart Center, Department of Internal Medicine, Virginia Commonwealth University Health Sciences; [11]Department of Biomedical Engineering, Virginia Commonwealth University

Background

- Near complete estrogen deprivation (NCED) with ovarian suppression and aromatase inhibition improves survival outcomes in premenopausal women with hormone receptor (HR)+ breast cancer (BC)
- Premature menopause is associated with cardiovascular (CV) morbidity in non-cancer population
- The natural history of CV health in premenopausal women undergoing BC treatment is underexplored
- Advanced cardiac imaging is uncommon so cardiac and extracardiac imaging findings in this patient population are largely uncharacterized

Methods

- CROWN study of premenopausal women with stage I-III BC receiving NCED for HR+ BC and comparator cohort with HR- BC
- Advanced cardiac imaging with cardiac magnetic resonance and coronary computed tomography angiography completed to evaluate the natural history of CV health in study participant
- 83 participants with completed baseline imaging were included in this analysis
- Imaging findings were categorized as "unexpected" if they were not part of the primary or secondary endpoints of myocardial perfusion reserve and surrogates of large and small CV vessel disease such as coronary calcium
- Small, clinically insignificant findings were excluded

Results

42.2% of participants with unexpected findings
(43 findings in 35 participants)

8 cardiac findings

3 congenital
- 1 ASD with shunting, 1 PFO, 1 anomalous LCx

3 structural
- 1 LVH, 2 mildly dilated right and left atria

1 dilated pulmonary artery, 1 intracardiac thrombus

4 (4.8%) cardiology referrals

1 (1.2%) CV procedures

35 extracardiac findings

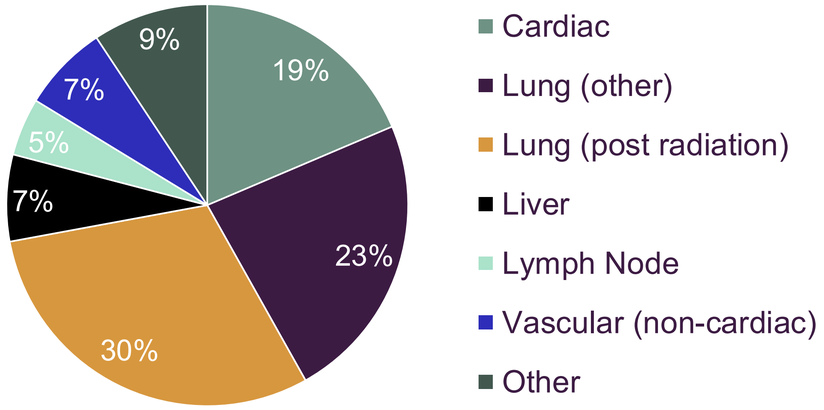
6 (7.3%) subsequent serial imaging studies

5 (6.0%) subsequent imaging - single studies

2 (2.4%) biopsies completed

2 (2.4%) asymptomatic recurrences identified

Location of Unexpected Findings



Conclusions

- Unexpected imaging findings on baseline scans occurred in 42.2% of patients
- Some were of immediate clinical significance, including discovery of congenital heart diseases (1-ASD with PAPVR and shunting 2-PFO), intracardiac thrombus, dilated pulmonary artery, and identification of two asymptomatic BC recurrences
- These findings highlight the prevalence of incidental cardiac and extracardiac findings in this understudied population
- Ongoing work seeks to understand the broad clinical impact of these findings in premenopausal women as we seek to optimize both CV and cancer outcomes

Contact:
Amanda Broderick; Amanda.Broderick@duke.edu
Alexandra Thomas; Alexandra.Thomas@duke.edu

References

1.Thomas A, O'Connell NS, Douglas E, Hatcher S, Park CJ, Dent S, Ansley K, Klem I, Bansal R, Westbrook K, Hundley WG, Bottinor W, Hackney MH, Richardson KM, Sirkisoon SR, D'Agostino RB Jr, Jordan JH. Cardiovascular impact of near complete estrogen deprivation in premenopausal women with breast cancer: The CROWN study. Am Heart J. 2024 Jan;267:33-43. doi: 10.1016/j.ahj.2023.10.007. Epub 2023 Oct 26. PMID: 37890547; PMCID: PMC10976295.

2.El Khoudary SR, Aggarwal B, Beckie TM, Hodis HN, Johnson AE, Langer RD, Limacher MC, Manson JE, Stefanick ML, Allison MA; American Heart Association Prevention Science Committee of the Council on Epidemiology and Prevention; and Council on Cardiovascular and Stroke Nursing. Menopause Transition and Cardiovascular Disease Risk: Implications for Timing of Early Prevention: A Scientific Statement From the American Heart Association. Circulation. 2020 Dec 22;142(25):e506-e532. doi: 10.1161/CIR.0000000000000912. Epub 2020 Nov 30. PMID: 33251828.

3.Okwuosa TM, Anzevino S, Rao R. Cardiovascular disease in cancer survivors. Postgrad Med J. 2017 Feb;93(1096):82-90. doi: 10.1136/postgradmedj-2016-134417. Epub 2016 Oct 8. PMID: 28123076.